

June 25, 1951.

Dr. E. C. Albritton,  
Handbook of Biological Data,  
National Research Council,  
2101 Constitution Avenue,  
Washington 25, D.C.

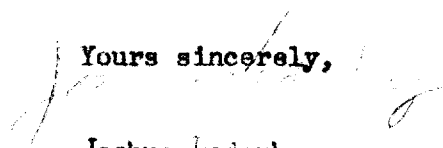
Dear Dr. Albritton:

Thank you for your letter of June 12, clarifying the scope of the Handbook's coverage of nutritional data on microorganisms. As you point out, specific modifications will have to be made for microorganisms.

With the clearer picture now provided, it becomes obvious that I would be poorly qualified to contribute to this section. My research interests involve nutritional requirements only as tools of genetic investigations, and I have not had occasion to compile or determine the quantitative data in which you would be interested. It would be far more economical to call upon someone whose special interests fall more closely within the scope of the project.

For this purpose, I already mentioned Drs. Peterson and Knight. E.E. Snell would be another logical candidate (present address- Clayton Biochemical Institute, U. of Texas, Austin). You might also do well to consult Dr. B. D. Davis, Tbc. Research Laboratories, USPHS, 411 E. 69 St., New York 21; and Dr. W. D. McElroy, Pratt-McCollum Institute, Johns Hopkins University.

Yours sincerely,

  
Joshua Lederberg,  
Associate Professor of Genetics

TABLES ON  
NUTRITION AND METABOLISM

Three major areas must be covered in the tables on Nutrition and Metabolism:

- (A) The Nutrient Requirements of Organisms
- (B) The Chemical Composition of Organisms
- (C) The Metabolic Processes and Intermediate and Final Metabolites of Organisms

This formulation is for the purpose of assuring complete coverage. It does not necessarily reflect the groupings of the actual tables. It is important, for example, that the Handbook contain tables of the composition of milk, but of minor importance at the present time whether such tables will be placed in a section devoted to metabolic products or, alternatively, in a section on nutrient requirements.

A-1. The initial table (or group of tables) in the series devoted to any one class of organism will probably be one in which the first column lists certain selected\* organisms and is succeeded by other columns devoted to each of the nutrients--water, oxygen, (carbon dioxide), the amino acids or protein, carbohydrate, fat, each of the minerals, each of the vitamins. Entries in these columns opposite any one organism may be a simple plus or zero to indicate need or absence of need of the given nutrient.

Footnotes will point out for any given organism the facultative use or absence of need of any nutrient, the method by which the measurements or other observations were made, and other necessary information.

A-2. A second table (or group of tables), with similar format, should present the mean and range of variation of the quantity of each nutrient utilized by the organism\* and the overall energy transformation, per unit of weight or other appropriate unit, per time interval, under optimal or standard or specified conditions of temperature, activity, etc. It is recognized that such data exist for comparatively few organisms, and the Handbook Committee solicits suggestions of alternative presentations.

A-3. A third table (or group of tables) again with format similar to the first, should give, for suitable organisms\*, the average and/or range of acceptable concentrations of each of the nutrients in culture solutions or other media, and the nature and quantity of inert matter and other materials present. Also desired are the pH, oxygen tension, temperature, porosity and other required characteristics. Data on soil and fertilizers are also desired, with such modification in manner of organization and presentation as may be necessary.

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\*Selected as being, in the judgment of the contributor, most representative or of greatest scientific or economic importance.

A-4. A fourth group of tables should give for each organism\*, under standard or specified conditions, the optimal or recommended or satisfactory or naturally chosen or preferred substrate, nutritive habitat, or diet. Quantitative data are desired if appropriate and available.

Specifically desired for man, where available, are:

- (a) The natural food items and quantity in an average day's intake, as found in different geographic locations at different seasons and economic levels;
- (b) Analysis of foods for content of nutrients (and non-nutrient residue);
- (c) Average quantity and/or range of each nutrient taken per day;
- (d) Recommended dietary allowances;
- (e) Modifications of diet associated with or recommended for differences in age, sex, activity, occupation, and for efficiency and longevity.

B. Tables are desired giving the chemical composition of organisms and their tissues. They may be organized initially on a "present or absent" basis and then elaborated into a series of quantitative tables.

C-1. Tables are desired giving data on both intermediate and final substances, secretions, and other metabolic products of organisms, including digestive, endocrine and other secretions. Where available the data should include the rate of turnover, or of discharge from the organism. As already mentioned (in A-2), the energy exchange between the organism and its environment (cf. the "metabolic rate" in Calories in man) is also desired, where data are available.

C-2. The Handbook Committee invites suggestion of tables and charts giving pathways of metabolic processes.

Additional topics satellite to these are: (a) Influences external and internal to the organism that affect the pattern of its nutritional requirements, composition and/or metabolic processes and metabolites, and (b) The effects upon the organism of excess or deficiency of each of its nutrients, chemical components and/or metabolic processes or metabolites.

THE HANDBOOK COMMITTEE